

# Electronic Systems Technician

## L3 ELECTRONIC SYSTEMS TECHNICIAN

LEVEL 3



### Curriculum Notes

- 192.5 Hours
- Revised: 2021, Fourth Edition
- Downloadable instructor resources that include module tests, PowerPoints®, and performance profile sheets are available at [www.nccer.org/irc](http://www.nccer.org/irc).

#### PAPERBACK

Trainee Guide: \$99.99

ISBN

978-0-13-684451-8

#### DIGITAL

NCCERconnect Access Card: \$99.99

NCCERconnect +

Trainee Guide: \$124.99

ISBN

978-0-13-684435-8

978-0-13-768322-2

### MODULES

The modules listed below are included in the Trainee Guide. The following ISBNs are for ordering individual modules only.

#### Limited-Energy Cabling (20 Hours)

ISBN 978-0-13-689799-6

(Module ID 33108) Covers the makeup, identification, and applications of conductors and cables used in limited-energy applications. Describes the tools, materials, and procedures for pulling limited-energy cabling through conduit and raceways.

#### Limited-Energy Cable Selection (10 Hours)

ISBN 978-0-13-690840-1

(Module ID 33208) Provides an overview of the types of cable used for limited-energy installations. Also covers methods used to select the proper size and type of cable for a typical low-voltage installations.

#### Limited-Energy Cable Termination (25 Hours)

ISBN 978-0-13-690834-0

(Module ID 33209) Provides information and instructions for selecting, installing, and testing connectors and other terminating devices on cables used in limited-energy work, including telecommunications, video, audio, and fiber optic installations.

#### Limited-Energy Network Installations (25 Hours)

ISBN 978-0-13-681283-8

(Module ID 33301) Details procedures for connecting computers and other devices using both wired and wireless network connections. Describes components and architecture of ethernet, LAN, and powerline carrier networks.

#### Fiber Optics (25 Hours)

ISBN 978-0-13-681292-0

(Module ID 33302) Introduces the types of equipment and methods used in fiber-optic cable installation.

#### Wireless Communication (15 Hours)

ISBN 978-0-13-684443-3

(Module ID 33303) Introduces wireless communications and discusses current technologies transforming the market to include 5G, various residential and wireless networks, and a variety of mobile devices. Covers updated technologies and their implications. Emphasizes growing relevance of network security.

#### Site Survey, Project Planning, and Documentation (15 Hours)

ISBN 978-0-13-681282-1

(Module ID 33304) Explains planning a job from start to finish, including how to perform site surveys for new and retrofit construction projects. Covers drawings, specifications, and current software applications used on the construction site.

#### Rack Assembly (17.5 Hours)

ISBN 978-0-13684438-9

(Module ID 33305) Describes rack systems and best practices for assembling electronic system enclosures, including power sequencing, grounding, bonding, weight distribution, and heat dissipation. Explains electrical power distribution and load calculations for equipment housed within racks.

#### System Commissioning and User Training (20 Hours)

ISBN 978-0-13-684446-4

(Module ID 33306) Covers basic steps in the commission process including development of the plan and user-required training approach. Describes customer satisfaction levels and meeting expectations during the cut-over phase of a project.

#### Maintenance and Repair (20 Hours)

ISBN 978-0-13-681276-0

(Module ID 33307) Introduces tasks involved in the maintenance and repair of limited-energy systems and equipment. Presents a systematic approach to system and component-level troubleshooting and methods of identifying common repair types.

Electronic Systems Technician (EST) has been combined with NCCER's Electrical series to provide additional career pathways. After completing Electrical Levels 1 and 2, trainees can choose to advance into Electrical Levels 3-4 or EST Levels 3-4.

## L4 ELECTRONIC SYSTEMS TECHNICIAN

LEVEL 4



### Curriculum Notes

- 315 Hours
- Revised: 2021, Fourth Edition
- Downloadable instructor resources that include module tests, PowerPoints®, and performance profile sheets are available at [www.nccer.org/irc](http://www.nccer.org/irc).

#### PAPERBACK

Trainee Guide: \$99.99

ISBN

978-0-13-684415-0

#### DIGITAL

NCCERconnect Access Code: \$99.99

NCCERconnect +

Trainee Guide: \$124.99

ISBN

978-0-13-684421-1

978-0-13-768323-9

### MODULES

The modules listed below are included in the Trainee Guide. The following ISBNs are for ordering individual modules only.

#### Audio Systems (30 Hours)

ISBN 978-0-13-684414-3

(Module ID 33401) Introduces and explains audio system components, including input sources, amplifiers, signal processing equipment, and output equipment. Describes power requirements, cabling options, system configuration, and basic design considerations. Reviews common test equipment used for installation and troubleshooting.

#### Video Systems (40 Hours)

ISBN 978-0-13-684402-0

(Module ID 33402) Describes the types of equipment used in various video systems and equipment, including both analog and digital video, video signaling, display devices, HDTV, reality technologies, and videoprocessing and distribution.

#### Broadband (25 Hours)

ISBN 978-0-13-684350-4

(Module ID 33403) Explains the history of broadband and explores the primary delivery methods, including telephone lines, DSL, ADSL, BPL, cable and fiber optics, satellite, cellular, Wi-Fi®, and emerging technologies such as low earth orbit satellites.

#### Media Management Systems (25 Hours)

ISBN 978-0-13-684408-2

(Module ID 33404) Explains the basic principles behind shared media resources and their access via computer networks, wireless systems, and hardwired applications. Describes media types for both analog and digital platforms. Explores cabling options including fiber optic interfaces.

#### Telecommunications Systems (20 Hours)

ISBN 978-0-13-684403-7

(Module ID 33405) Describes the history and updates of basic subscriber systems. Identifies types of telephone technologies, compares multiplexing and modulation, and covers Voice over Internet Protocol (VoIP).

#### Residential and Commercial Networks (15 Hours)

ISBN 978-0-13-684372-6

(Module ID 33406) Explains the integration of current and diverse low-voltage systems and the trend toward their singular hub control (or star topology connectivity). Covers implications of user-interfacing technologies. Updated to 2020 NEC® codes as well as future outlook of building networks.

#### Intrusion Detection Systems (30 Hours)

ISBN 978-0-13-684339-9

(Module ID 33407) Describes devices such as sensors, notification, control panels, and programming used in intrusion detection security systems. Covers system design and installation guidelines, wiring, testing, and troubleshooting. Emphasizes codes and standards.

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## Electronic Systems Technician Level 4 (continued)

### **Fire Alarm Systems** (40 Hours)

ISBN 978-0-13-684394-8

(Module ID 33408) Covers the basics of fire alarm systems, including devices, circuits, system design and installation guidelines, power requirements, control unit programming, testing, and troubleshooting. Explores integration of fire alarms with other systems. Examines both residential and commercial fire alarm applications, emphasizing NEC® requirements and those found in NFPA 72..

### **Nurse Call and Signaling Systems** (15 Hours)

ISBN 978-0-13-684382-5

(Module ID 33409) Presents an overview of nurse call and signaling systems as found in hospitals and other healthcare facilities. Covers basic emergency call and duress system requirements based on facility type. Identifies installation requirements based on UL and other building code specifications.

### **Closed Circuit Television (CCTV)** (30 Hours)

ISBN 978-0-13-684362-7

(Module ID 33410) Describes the installation and configuration of closed circuit TV systems for small, medium, and large facilities. Explains various equipment and concepts, including cameras, lenses, remote positioning, video recording, cloud storage, and transmission. Covers the roles of the internet and digital technologies. Introduces test and troubleshooting equipment.

### **Access Control Systems** (35 Hours)

ISBN 978-0-13-684388-7

(Module ID 33411) Introduces access control systems and applications including, door security and locking devices, card and biometric readers, and current ingress/egress technologies. Emphasizes installation practices as well as building and electrical codes.

### **EST and Internet of Things (IoT)** (10 Hours)

ISBN 978-0-13-684363-4

(Module ID 33412) Introduces the history, development, and application of integrated Internet of Things (IoT) technologies as well as their influences on contemporary electronics. Addresses the increased need for component integration and introduces basic IoT devices involved today's systems. Presents an outlook on the future of IoT and its increased demand for ESTs.